Food Technology
22203

Rationale statement:
Like other sciences, food technology has advanced rapidly in recent decades. New technologies continue to open the doors for discoveries. Basic food preparation skills are a life skill that will benefit you all of your life. Once you have learned these skills, you will be able to plan and prepare meals, use basic math skills, contribute to community service, or find a rewarding career in food science or food preparation.

Food Technology is a course designed to offer opportunities to study the composition, structure, and properties of foods. The chemical changes that occur during the processing, storage, preparation, and consumption of food will also be examined. This course explores the effects of various materials, microorganisms, and processes on food products through laboratory experiments.

Grade Level: 9-10

Course Topics:

Bloom's Taxonomy Level	Standards and Examples
Indicator #1: Integrate knowledge, skills, and practices required for careers in food science, food processing and food production from production to consumption.	
Evaluate	FT 1.1 Determine the contributions of food science to society. *Examples:* • Research history of food science and create crossword puzzle • Create a timeline of significant contributions to food science industry • Complete scavenger hunt examining nutrient information from various sources • Understand the benefits and role of the food preservation and processing • Compare and contrast nutrition labels from various sources including food packaging, menus, websites, recipes • Complete the FCCLA STAR Event, Applied Technology to develop information for a community group
Understand	FT 1.2 Summarize food science in relation to social change and technological advances. *Examples:*

	• Complete a slide presentation • Debate a food science advancement and its long term effects including ethical, environmental, health, or societal • Create a "Fact or Fiction" fact sheet based on the technological changes in the last 20 years.
Understand	FT 1.3 Explain contributions of food science to changing food quality and availability. *Examples:* • Develop a brochure on available foods or food needed to support local food pantry • Investigate and list the countries of origin of various foods • Determine how foods are transported locally, nationally, and globally from farm to table using a vod/pod cast • Investigate methods used to preserve quality of food chain • Create informational newsletter on the environmental impact of food products and processing trends
Analyze	FT 1.4 Investigate careers in food science, food processing, culinology, and food production industries. *Examples:* • Identify famous food scientists and complete a report on their contributions • Interview local food service or food processing industry representative • Create an employment description for an industry professional • Invite food industry professionals to for a panel discussion • Tour a virtual/local food processing facility • Complete the FCCLA STAR Event, Career Investigation
Indicator #2: Explore scientific practices as they relate to the food industry.	
Evaluate	FT 2.1 Determine the steps in the scientific method and demonstrate its use in scientific experimentation. *Examples:* • Illustrate the scientific method in the lab with a simple experiment. Example: adding an acid to baking soda will cause gas production. • Develop a project using the steps in the scientific method to create a new food. • In a food lab, conduct multiple experiments using heat, cold and chemicals to change a food product and illustrate how and why the heat, cold and chemicals can change foods. • Create a social networking message in 140 characters or less to post to summarize the scientific method

Apply	FT 2.2 Demonstrate safe laboratory practices. *Examples:* • Download and review a Material Safety Data Sheets (MSDS) of chemicals found in the lab • Prepare a complete set of guidelines for students that clearly explain laboratory safety with chemicals and laboratory equipment. • Create a safety contract
Apply	FT 2.3 Classify the skills needed for valid and reliable scientific experiments. *Examples:* • Create a board game based on scientific experiments and skills • Have students practice measuring various food ingredients and weigh the measured ingredients. Compare the weights obtained. • Compare and contrast scientific measurements to common kitchen measurements based on using the same recipe • Conduct an experiment using a control group • Read an industry related journal article to check for validity and reliability
Indicator # 3: Investigate the basics of food composition.	
Evaluate	FT 3.1 Differentiate the roles of the three phases of water in food preparation and food processing and food safety. *Examples:* • Demonstrate the three phases of water by steaming, dehydration, freezing a food product (carrots, apples) • Describe how water is used in food processing and preparation methods • Conduct an experiment why some foods are more perishable because they have a higher water content • Explain why adding sugar or salt to moist foods decreases perishability
Understand	FT 3.2 Explain the chemical composition of macro nutrients in food processing and preparation. *Examples:* • Describe basic chemistry of protein, fat and carbohydrates • Investigate the chemical composition of foods using Mypyramid.gov • Food lab using hard and soft ball comparison of caramels • Food lab to determine proper temperature of cooking protein foods • Food lab to investigate the properties of fat used in cooking or baking food

Understand	FT 3.3 Explain the chemical composition of micro nutrients in food processing and preparation. *Examples:* • Describe the chemical contributions of vitamins and individual minerals to foods • Investigate the vitamin and mineral content of foods using MyPyramid.gov • Food lab to experiment the amount of vitamin C lost as a result of various food processing methods • Prepare a poster to describe the effects of fortification and enrichment in food
Indicator #4: Demonstrate food safety and sanitation procedures.	
Remember	FT 4.1 Recognize practices and procedures that minimize the risks of food borne illness. *Examples:* • Identify regulatory agencies that protect the public from food borne illness. • Create a poster identifying prevention of a food borne illness • Write a song, animation, poem, jingle, rap or PSA about the importance of hand washing and hand sanitizer • Complete ServSafe certification process • Write a RAFT as a food
Analyze	FT 4.2 Differentiate how microorganisms act in food and their effect on food products. *Examples:* • Prepare presentations highlighting individual harmful microorganisms and their role in food spoilage and food borne illness • Demonstrate useful microorganisms as in lab making yogurt, root beer, cheese, or yeast bread • Diagnose probable causes based on client case studies and make a recommend for future
Understand	FT 4.3 Classify sources of contamination: chemical, physical and biological. *Examples:* • Scavenger hunt looking for chemical products stored in the kitchen or near food products • Investigate a current food recall • Prepare posters that illustrate how to read labels for pesticide use with food products • Conduct experiment with Glo Germ or "Hello Jell-O" contamination experiment

Indicator #5: Explore the role of sensory evaluation in the food industry.	
Apply	FT 5.1 Differentiate sensory characteristics that affect food preferences. *Examples:* • Use a case study to identify how senses influences choices • In the lab, conduct a taste panel tasting of a food product, student could be blindfolded • Food lab using water that is flavored and has a color dye added • Food lab adding flavor to milk for taste testing • Compare and contrast the texture of different foods • Compare and contrast name brand and house brand
Apply	FT 5.2 Implement procedures for evaluation of sensory characteristics. *Examples:* • Design a checklist for procedures when working with the senses and people • Develop a taste panel form, test it in the lab • Investigate the appropriate procedures for conducting a taste panel
Indicator #6: Explore technological advances in food science, food processing, and food production.	
Understand	FT 6.1 Explore scientific advances that have changed the food supply. *Examples:* • Debate in class the advantages/disadvantages of a change, which may include GMO's • Compile a list of food sources that have been changed via natural breeding techniques and artificial genetic modification • Write a persuasive essay or speech discussing the changes affecting food industry through history
Analyze	FT 6.2 Examine the use of technology in new food product development. *Examples:* • View Institute of Food Technologist (IFT) video on new food product development available at http://www.ift.org/Knowledge-Center/Learn-About-Food-Science/K12-Outreach/Video-and-Media/From-Concept-to-Consumer.aspx • Determine the new technologies in food processing that have changed our food supply for example, quality, shelf stability, nutrient content, availability, and convenience • Develop a new food product using the FCCLA STAR Event, Food Innovations • Conduct a class discussion "are we better off with our technologically enhanced food supply or is it better to utilize unprocessed foods?"